What is claimed is:

1. An electrode material comprising a surface/chemically modified positive electrode (cathode) material, wherein the surface/chemical modification is a ceramic.

2. The composition of claim 1, wherein the surface/chemical modification is selected from the group consisting of $Li_xNi_{1-y}M_yO_2$, where $0 \leq x \leq 1$, $0 \leq y \leq 1$, and M = Mg, Al, Ti, V, Cr, Fe, Co, Cu, Zn, and Ga; Al_2O_3; Cr_2O_3; MgO; $Al_{2-y}Mg_yO_{3-0.5y}$ where $0 \leq y \leq 2$; $Li_{1+x}Mn_{2-x-y}M_yO_4$ where $0 \leq x \leq 0.33$, $0 \leq y \leq 2$ and M = Mg, Al, Ti, V, Cr, Fe, Co, Ni, Cu and Zn; $Zr_{1-y}M_yO_{2-y}$ where $0 \leq y \leq 1$ and M = Mg, Ca; $Zr_{1-y}M_yO_{2-0.5y}$ where $0 \leq y \leq 1$ and M = Sc, Y; and a combinations thereof.

3. The composition of claim 1, wherein the positive electrode (cathode) material is selected from the group consisting of $LiCoO_2$, $LiMn_2O_4$, $LiNi_{1-y}Co_yO_2$ where $0 \leq y \leq 1$ and $LiMn_{1-y}M_yO_2$ where M = Cr and Al and $0 \leq y \leq 1$, and $Li_{1+x}Mn_{2-x-y}M_yO_{4-z+\delta}X_z$ where $0 \leq x \leq 0.33$, $0 \leq y \leq 1$, $0 \leq \delta \leq 0.5$, M = Mg, Al, Ti, V, Cr, Fe, Co, Ni, Cu and Zn, and X = F and S.

4. The composition of claim 1, wherein the positive electrode (cathode) material is $LiMn_2O_4$.

5. The composition of claim 1, wherein the positive electrode (cathode) material is $LiCoO_2$.

6. The composition of claim 1, wherein the surface/chemical modification material is $Li_xNi_{1-y}Co_yO_2$, where $0 \leq x \leq 1$; $0 \leq y \leq 1$.

7. The composition of claim 1, wherein the surface/chemical modification material is Al_2O_3.

8. The composition of claim 1, wherein the surface/chemical modification material is MgO.

9. The composition of claim 1, wherein the surface/chemical modification material is $MgAl_2O_4$.

10. The composition of claim 1, wherein the surface/chemical modification material is $Li_{1.05}Mn_{1.9}Ni_{0.05}O_4$.

11. The composition of claim 1, wherein the surface/chemical modification material is Cr_2O_3.

12. An electrode material comprising a $LiMn_2O_4$ spinel oxide having been surface/chemically modified with a surface/chemical modification material selected from the group consisting of $Li_xNi_{1-y}Co_yO_2$, where $0 \leq x \leq 1$; $0 \leq y \leq 1$; Al_2O_3; Cr_2O_3; MgO; $MgAl_2O_4$; and a combinations thereof.

13. The composition of claim 11, wherein the surface/chemical modification material is $Li_xNi_{1-y}Co_yO_2$, where $0 \leq x \leq 1$; $0 \leq y \leq 1$.

14. The composition of claim 11, wherein the surface/chemical modification material is Al_2O_3.

15. The composition of claim 11, wherein the surface/chemical modification material is MgO.

16. The composition of claim 11, wherein the surface/chemical modification material is $MgAl_2O_4$.

17. The composition of claim 11, wherein the surface/chemical modification material is Cr_2O_3.

18. An electrode material comprising a $LiCoO_2$ layered oxide having been surface/chemically modified with a surface/chemical modification material selected from the group consisting of Al_2O_3; Cr_2O_3; MgO, $MgAl_2O_4$; $Li_{1+x}Mn_{2-x-y}M_yO_4$ where $0 \leq x \leq 0.33$, $0 \leq y \leq 2$ and M = Ni or Co; and a combinations thereof.

19. The composition of claim 17, wherein the surface modification material is Al_2O_3.

20. The composition of claim 17, wherein the surface modification material is $Li_{1.05}Mn_{1.9}Ni_{0.05}O_4$

21. An electrode material preparation method comprising:

supplying a $LiMn_2O_4$ spinel oxide electrode material;

mixing the $LiMn_2O_4$ spinel oxide electrode material with a surface/chemical modification material selected from a group consisting of $Li_xNi_{1-y}Co_yO_2$, where $0 \leq x \leq 1$; $0 \leq y \leq 1$; Al_2O_3; Cr_2O_3; MgO; $MgAl_2O_4$; and combinations thereof ; and

heat-treating the mixture to prepare a surface/chemically modified $LiMn_2O_4$ electrode material.

22. The method of claim 20, wherein the heat-treating is performed at a temperature in the approximate range of 100°C to 1000°C.

23. The method of claim 20 wherein the heat-treating is performed for approximately 1 to 24 hours.

24. The method of claim 20, wherein the surface/chemical modification material is in the approximate range of 1 to 20 weight percent of the surface/chemically modified $LiMn_2O_4$ electrode material.

25. An electrode material comprising a surface/chemically modified $LiMn_2O_4$ spinel oxide said electrode material prepared by a process comprising:

a) refluxion of a precursor solution in glacial acetic acid, wherein the precursor is selected from a group consisting of Li_xCoO_2, $LiCo_{0.5}Ni_{0.5}O_2$, and Al_2O_3;

b) preparing a precursor solution in water, wherein the precursor is selected from a group consisting of Al_2O_3; Cr_2O_3; MgO, and $MgAl_2O_4$;

c) dispersing $LiMn_2O_4$ spinel oxide in the precursor solution; and

d) heating the dispersed $LiMn_2O_4$ spinel oxide to approximately 100 to 500 degrees C; and

e) firing the heated dispersed $LiMn_2O_4$ spinel oxide at 500 to 900 degrees C.

26. A method of preparing an electrode material for lithium-ion batteries comprising:

supplying a $LiCoO_2$ layered oxide electrode material;

mixing the $LiCoO_2$ layered oxide electrode material with a surface/chemical modification material selected from a group consisting of Al_2O_3; Cr_2O_3; MgO, $MgAl_2O_4$; $Li_{1+x}Mn_{2-x-y}M_yO_4$ where $0 \leq x \leq 0.33$, $0 \leq y \leq 2$ and M = Ni or Co; and combinations thereof; and

heat-treating the mixture to prepare a surface/chemically modified $LiCoO_2$ electrode material.

27. The method of claim 23, wherein the heat-treating is performed at a temperature in the approximate range of 100°C to 1000°C.

28. The method of claim 23 wherein the heat-treating is performed for approximately 1 to 24 hours.

29. The method of claim 25, wherein the surface/chemical modification material is in the approximate range of 1 to 20 weight percent of the surface/chemically modified $LiCoO_2$ electrode material.

30. An electrode material comprising a surface/chemically modified $LiCoO_2$ layered oxide said electrode material prepared by a process comprising:

a) refluxion of a precursor solution in glacial acetic acid, wherein the precursor is selected from a group consisting of Al_2O_3; Cr_2O_3; MgO, $MgAl_2O_4$; $Li_{1+x}Mn_{2-x-y}M_yO_4$ where $0 \leq x \leq 0.33$, $0 \leq y \leq 2$ and M = Ni or Co;

b) preparing a precursor solution in water, wherein the precursor is selected from a group consisting of Al_2O_3; Cr_2O_3; MgO, and $MgAl_2O_4$;

c) dispersing $LiCoO_2$ layered oxide in the precursor solution; and

d) heating the dispersed $LiCoO_2$ layered oxide to approximately 100 to 500 degrees C; and

e) firing the heated dispersed $LiCoO_2$ layered oxide at 500-900 degrees C.